

1 This listing of claims will replace all prior versions, and listings, of claims
2 in the application.

3
4 **Listing of Claims:**

5
6 Claim 1 (Currently amended): A kernel-level transaction system,
7 comprising:

8 a memory;

9 one or more processors operatively coupled to the memory;

10 plural kernel objects to implement a transaction having plural operations;

11 and

12 a security descriptor, applied to at least one of the kernel objects, to identify
13 at least one user, to identify one of the operations of the transaction that may be
14 performed on the kernel object to which the security descriptor is applied, and to
15 identify a right indicating that the identified user is permitted or prohibited to
16 perform the operation.

17
18 Claim 2 (Original): A system according to claim 1, wherein the plural
19 kernel objects include:

20 a transaction object to represent a transaction;

21 a resource manager object to represent a resource participating in the
22 transaction; and

23 an enlistment object to enlist participants in the transaction.
24
25

1 Claim 3 (Original): A system according to claim 1, wherein the security
2 descriptor comprises at least one access control entry (ACE), which includes a
3 security identifier (SID) and rights corresponding to the SID.

4
5 Claim 4 (Original): A system according to claim 2, wherein the security
6 descriptor is applied to the transaction object, and the operation identified by the
7 security descriptor includes at least one of:

8 set information regarding the transaction object,
9 enlist the transaction object in the transaction,
10 render data updates in connection with the transaction object durable,
11 abort the operation on the transaction object,
12 transmit data from the transaction object to another object,
13 the current point of the transaction at the transaction object, and
14 transmit data regarding the transaction to another device.

15
16 Claim 5 (Original): A system according to claim 2, wherein the security
17 descriptor is applied to the resource manager object, and the operation identified
18 by the security descriptor includes at least one of:

19 retrieve information regarding the resource manager object,
20 set information regarding the resource manager object,
21 determine the state of a transaction at a moment of transaction failure,
22 enlist the resource manager object in a transaction,
23 register the resource manager object in the transaction,
24 receive notification upon resolution of a transaction at the resource manager
25 object, and

1 set resource data in accordance with the transaction resolution.
2

3 Claim 6 (Original): A system according to claim 2, wherein the security
4 descriptor is applied to the enlistment object, and the operation identified by the
5 security descriptor includes at least one of:

6 get information regarding the enlistment object,
7 set information regarding the enlistment object,
8 determine a state of enlistments at a moment of transaction failure
9 obtain and reference an enlistment key,
10 rollback the transaction and to respond to notifications, and
11 perform operations a superior transaction manager would perform.
12

13 Claim 7 (Original): A method of implementing a kernel-level transaction,
14 comprising:

15 attaching a security descriptor to at least one of plural kernel objects utilized
16 in a transaction; and

17 performing an operation for a transaction on the at least one kernel object in
18 accordance with the rights accorded by the security descriptor attached to the at
19 least one kernel object.
20

21 Claim 8 (Original): A method according to claim 7, wherein the security
22 descriptor includes identification for at least one user, an operation that is able to
23 be performed on the at least one kernel object to which the security descriptor is
24 attached, and a right indicating that the identified user is permitted or prohibited to
25 perform the operation.

1
2 Claim 9 (Original): A method according to claim 8, wherein the at least
3 one kernel object is a transaction object.
4

5 Claim 10 (Original): A method according to claim 8, wherein the at
6 least one kernel object is a resource manager object.
7

8 Claim 11 (Original): A method according to claim 8, wherein the at
9 least one kernel object is an enlistment object.
10

11 Claim 12 (Original): A method according to claim 9, wherein the
12 operation identified by the security descriptor attached to the transaction object
13 includes at least one of:

14 set information regarding the transaction object,
15 enlist the transaction object in the transaction,
16 render data updates in connection with the transaction object durable,
17 abort the operation on the transaction object,
18 transmit data from the transaction object to another object,
19 save the current point of the transaction at the transaction object, and
20 transmit data regarding the transaction to another device.
21

22 Claim 13 (Original): A method according to claim 10, wherein the
23 operation identified by the security descriptor attached to the resource manager
24 object includes at least one of:

25 retrieve information regarding the resource manager object,

1 set information regarding the resource manager object,
2 determine the state of a transaction at a moment of transaction failure,
3 enlist the resource manager object in a transaction,
4 register the resource manager object in the transaction,
5 receive notification upon resolution of a transaction at the resource manager
6 object, and
7 set resource data in accordance with the transaction resolution.

8
9 Claim 14 (Original): A method according to claim 11, wherein the
10 operation identified by the security descriptor includes at least one of:

11 get information regarding the enlistment object,
12 set information regarding the enlistment object,
13 determine a state of enlistments at a moment of transaction failure,
14 obtain and reference an enlistment key,
15 rollback the transaction and to respond to notifications, and
16 perform operations a superior transaction manager would perform.

17
18 Claim 15 (Original): A computer-readable medium having stored
19 thereon an object attached to a kernel object, the object comprising:

20 a first data entry identifying at least one user;
21 a second data entry identifying an operation capable of being performed on
22 the kernel object by the user identified by the first data entry; and
23 a third data entry indicating a right for the user identified by the first data
24 entry to perform the operation identified by the second data entry.
25

1 Claim 16 (Original): A computer-readable medium according to
2 claim 15, wherein the kernel object is a transaction object, and the identified
3 operation includes at least one of:

4 set information regarding the transaction object,
5 enlist the transaction object in the transaction,
6 render data updates in connection with the transaction object durable,
7 abort the operation on the transaction object,
8 transmit data from the transaction object to another object,
9 save the current point of the transaction at the transaction object, and
10 transmit data regarding the transaction to another device.

11
12 Claim 17 (Original): A computer-readable medium according to
13 claim 15, wherein the kernel object is a resource manager object, and the identified
14 operation includes at least one of:

15 retrieve information regarding the resource manager object,
16 set information regarding the resource manager object,
17 determine the state of a transaction at a moment of transaction failure,
18 enlist the resource manager object in a transaction,
19 register the resource manager object in the transaction,
20 receive notification upon resolution of a transaction at the resource manager
21 object, and
22 set resource data in accordance with the transaction resolution.

1 Claim 18 (Original): A computer-readable medium according to
2 claim 15, wherein the kernel object is an enlistment object, and the identified
3 operation includes at least one of:

4 get information regarding the enlistment object,
5 set information regarding the enlistment object,
6 determine a state of enlistments at a moment of transaction failure,
7 obtain and reference an enlistment key,
8 rollback the transaction and to respond to notifications, and
9 perform operations a superior transaction manager would perform.

10
11 Claim 19 (Currently amended): A transaction method, comprising:
12 implementing a transaction among kernel objects; and
13 securing the transaction utilizing ~~The Microsoft.RTM. Windows.RTM. an~~
14 operating system security model that applies a security descriptor to at least one of
15 the kernel objects participating in the transaction.

16
17 Claim 20 (Currently amended): A transaction method according to
18 claim 19, wherein ~~The Microsoft.RTM. Windows.RTM. operating system security~~
19 ~~model includes applying a security descriptor to at least one of the kernel objects~~
20 ~~participating in the transaction, and~~ wherein the security descriptor identifies at
21 least one user, an operation to be performed on the at least one kernel object to
22 which the security descriptor is applied, and a right indicating that the identified
23 user is permitted or prohibited to perform the operation.

1 Claim 21 (Original): A method of implementing a transaction,
2 comprising:
3 attaching a security descriptor to at least one of plural objects utilized in a
4 transaction; and
5 performing an operation for a transaction on the at least one object in
6 accordance with the rights accorded by the security descriptor attached to the at
7 least one object.

8
9 Claim 22 (Original): A method according to claim 21, wherein the
10 security descriptor includes identification for at least one user, an operation to be
11 performed on the at least one object to which the security descriptor is attached,
12 and a right indicating that the identified user is permitted or prohibited to perform
13 the operation.

14
15 Claim 23 (Original): A method according to claim 22, wherein the at
16 least one object is a transaction object.

17
18 Claim 24 (Original): A method according to claim 22, wherein the at
19 least one object is a resource manager object.

20
21 Claim 25 (Original): A method according to claim 22, wherein the at
22 least one object is an enlistment object.

1 Claim 26 (Original): A method according to claim 23, wherein the
2 operation identified by the security descriptor attached to the transaction object
3 includes at least one of:

4 set information regarding the transaction object,
5 enlist the transaction object in the transaction,
6 render data updates in connection with the transaction object durable,
7 abort the operation on the transaction object,
8 transmit data from the transaction object to another object,
9 save the current point of the transaction at the transaction object, and
10 transmit data regarding the transaction to another device.

11
12 Claim 27 (Original): A method according to claim 24, wherein the
13 operation identified by the security descriptor attached to the resource manager
14 object includes at least one of:

15 retrieve information regarding the resource manager object,
16 set information regarding the resource manager object,
17 determine the state of a transaction at a moment of transaction failure,
18 enlist the resource manager object in a transaction,
19 register the resource manager object in the transaction,
20 receive notification upon resolution of a transaction at the resource manager
21 object, and
22 set resource data in accordance with the transaction resolution.

23
24 Claim 28 (Original): A method according to claim 25, wherein the
25 operation identified by the security descriptor includes at least one of:

1 get information regarding the enlistment object,
2 set information regarding the enlistment object,
3 determine a state of enlistments at a moment of transaction failure,
4 obtain and reference an enlistment key,
5 rollback the transaction and to respond to notifications, and
6 perform operations a superior transaction manager would perform.
7

8 Claim 29 (Currently amended): A kernel-level transaction system,
9 comprising:

10 a memory;
11 one or more processors operatively coupled to the memory;
12 means for implementing a transaction among kernel objects; and
13 means for securing the transaction by applying a security descriptor to at
14 least one of the kernel objects,
15 wherein the security descriptor identifies at least one user, an operation to
16 be performed on the kernel object to which the security descriptor is applied, and a
17 right indicating that the identified user is permitted or prohibited to perform the
18 operation.
19

20 Claim 30 (Original): A system according to claim 29, wherein the
21 kernel objects include:

22 a transaction object to represent a transaction;
23 a resource manager object to represent a resource participating in the
24 transaction; and
25 an enlistment object to enlist participants in the transaction.

1
2 Claim 31 (Original): A system according to claim 30, wherein the
3 security descriptor is applied to the transaction object, and the operation identified
4 by the security descriptor includes at least one of:

5 set information regarding the transaction object,
6 enlist the transaction object in the transaction,
7 render data updates in connection with the transaction object durable,
8 abort the operation on the transaction object,
9 transmit data from the transaction object to another object,
10 save the current point of the transaction at the transaction object, and
11 transmit data regarding the transaction to another device.

12
13 Claim 32 (Original): A system according to claim 30, wherein the
14 security descriptor is applied to the resource manager object, and the operation
15 identified by the security descriptor includes at least one of:

16 retrieve information regarding the resource manager object,
17 set information regarding the resource manager object,
18 determine the state of a transaction at a moment of transaction failure,
19 enlist the resource manager object in a transaction,
20 register the resource manager object in the transaction,
21 receive notification upon resolution of a transaction at the resource manager
22 object, and
23 set resource data in accordance with the transaction resolution.

1 Claim 33 (Original): A system according to claim 30, wherein the
2 security descriptor is applied to the enlistment object, and the operation identified
3 by the security descriptor includes at least one of:

4 get information regarding the enlistment object,

5 set information regarding the enlistment object, and

6 determine a state of enlistments at a moment of transaction failure.